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Access DB# 93282

# SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: MOLLY CUPERLEY Examiner #: 59757 Date: 05/06/03  
Art Unit: 1641 Phone Number 308-4239 Serial Number: 09/911683  
Mail Box and (Bldg/Room Location) 8D15 Results Format Preferred (circle) PAPER DISK E-MAIL

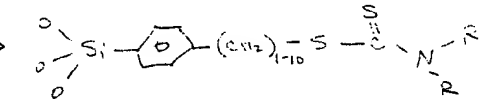
If more than one search is submitted, please prioritize searches in order of need. ME

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc. if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Water-soluble or water-dispersible segments therein + more words...  
Polymer brushes for immobilizing molecules to a surface and structure  
Inventors (please provide full names): See bibliographic data sheet attached

Earliest Priority Filing Date: 07/02/99

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

① Please search for the compound portion of claim 19 (see structure of terms -CH<sub>2</sub>- and Et). → 

② Please determine if the term "iniferter" is known (initiator-terminator -terminator).

③ Please search for ① AND each of the terms: polymer brush, the acrylamides of claims 24 + 25, probe, silica, silicon, trichlorosilane, oligonucleotide, initiator-control agent adduct.

See claims attached.

POINT OF CONTACT:  
PAUL SCHULWITZ  
TECHNICAL INFO. SPECIALIST  
DM1 6B06 TEL. (703) 305-1954

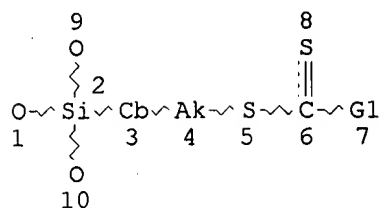
STAFF USE ONLY	Type of Search	Vendors and cost where applicable
Searcher: _____	NA Sequence (#) _____	STN <u>430.65</u>
Searcher Phone #: _____	AA Sequence (#) _____	Dialog _____
Searcher Location: _____	Structure (#) <u>1</u>	Questel/Orbit _____
Date Searcher Picked Up: <u>5/6</u>	Bibliographic _____	Dr.Link _____
Date Completed: <u>5/7</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: <u>10</u>	Fulltext _____	Sequence Systems _____
Clerical Prep Time: _____	Patent Family _____	WWW/Internet _____
Online Time: <u>27</u>	Other _____	Other (specify) _____

BEST AVAILABLE COPY

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L1

STR

NH~Ak  
@11 12Ak~N~Ak  
13 @14 15

VAR G1=NH2/11/14

NODE ATTRIBUTES:

CONNECT IS E2 RC AT 4

CONNECT IS E1 RC AT 12

CONNECT IS E1 RC AT 13

CONNECT IS E1 RC AT 15

DEFAULT MLEVEL IS ATOM

GGCAT IS MCY UNS AT 3

GGCAT IS LOC AT 12

GGCAT IS LOC AT 13

GGCAT IS LOC AT 15

DEFAULT ECLEVEL IS LIMITED

ECOUNT IS E6 C AT 3

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 15

STEREO ATTRIBUTES: NONE

L3 1 SEA FILE=REGISTRY SSS FUL L1

L4 2 SEA FILE=HCAPLUS ABB=ON PLU=ON L3

=&gt; d ibib abs hitstr 1-2

L4 ANSWER 1 OF 2 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2002:539935 HCAPLUS

DOCUMENT NUMBER: 137:90548

TITLE: Polymer brushes for immobilizing molecules to a surface or substrate having improved stability

INVENTOR(S): Klaerner, Gerrit; Benoit, Didier; Charmot, Dominique; Nomula, Srinivas; Piotti, Marcelo E.; Mazzola, Laura T.

PATENT ASSIGNEE(S): Symyx Technologies, Inc., USA

SOURCE: PCT Int. Appl., 162 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002056021	A2	20020718	WO 2002-US746	20020110
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,				

CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,  
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,  
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,  
PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ,  
UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU,  
TJ, TM

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH,  
CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR,  
BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

## PRIORITY APPLN. INFO.:

US 2001-271692P P 20010110

AB The invention concerns sensors for detg. the presence and concn. of  
bio-mols. in a biol. sample in the form of polymer brushes, which comprise  
a substrate having a surface modified with a hydrophobic polymer segment,  
attached to which is a water-dispersible or water-sol. polymer segment  
having functional groups that bind probes. The method of synthesis of  
such sensors preferably includes use of controlled free radical polymn.  
techniques, which allows for controlled architecture polymers to modify  
the surface of the substrate, and the use of monomers possessing  
functional groups which do not require activation prior to probe  
attachment. In this manner functional groups in the polymer chain are  
removed from the surface, which allows for soln. chem. to be more  
realistically reproduced with the benefits of a solid bound probe.

id 043,394

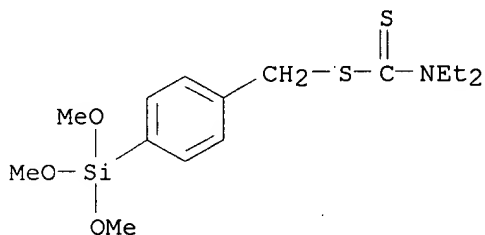
IT 258352-22-6P

RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)

(polymer brushes for immobilizing mols. to a surface or substrate  
having improved stability)

RN 258352-22-6 HCAPLUS

CN Carbamodithioic acid, diethyl-, [4-(trimethoxysilyl)phenyl]methyl ester  
(9CI) (CA INDEX NAME)



L4 ANSWER 2 OF 2 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1999:816381 HCAPLUS

DOCUMENT NUMBER: 132:152205

TITLE:

"Living" Free Radical Photopolymerization Initiated  
from Surface-Grafted Iniferter Monolayers

AUTHOR(S):

de Boer, B.; Simon, H. K.; Werts, M. P. L.; van der  
Vegte, E. W.; Hadziioannou, G.

CORPORATE SOURCE:

Department of Polymer Chemistry Materials Science  
Centre, University of Groningen, Groningen, 9747 AG,  
Neth.

SOURCE:

Macromolecules (2000), 33(2), 349-356

CODEN: MAMOBX; ISSN: 0024-9297

PUBLISHER:

American Chemical Society

DOCUMENT TYPE:

Journal

LANGUAGE: English

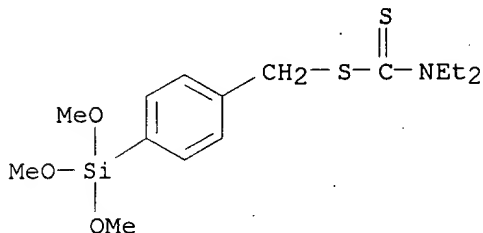
AB A method for chem. modifying a surface with grafted monolayers of initiator groups, which can be used for a "living" free radical photopolymer., is described. By using "living" free radical polymers., we were able to control the length of the grafted polymer chains and therefore the layer thickness up to .apprx.100 nm. Also, single-layer grafted block copolymers were obtained by subsequent polymers. of styrene and Me methacrylate monomers. The surface-grafted polymer and block copolymer layers were evidenced by direct imaging methods (transmission and SEM) and by indirect surface characterization methods (contact angle measurements, SFM, XPS, and IR). The ability to control the thickness of the grafted polymer as well as the synthesis of a grafted block copolymer layer in a well-defined manner affirms the "living" character of the surface-initiated free radical photopolymer.

IT 258352-22-6P

RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)  
(iniferter, Si-attached; "living" free radical photopolymer. initiated from surface-grafted iniferter monolayers)

RN 258352-22-6 HCAPLUS

CN Carbamodithioic acid, diethyl-, [4-(trimethoxysilyl)phenyl]methyl ester  
(9CI) (CA INDEX NAME)



REFERENCE COUNT:

40

THERE ARE 40 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

=> e iniferter/ct

E#	FREQUENCY	AT	TERM
E1	1		INIDGOFERA SUFFRUTICOSA/CT
E2	0	3	INIFERS/CT
E3	0	-->	INIFERTER/CT
E4	0	3	INIFERTERS/CT
E5	0	1	INIMICA/CT
E6	0	10	INIMICUS/CT
E7	15	11	INIMICUS JAPONICUS/CT
E8	0	1	ININI/CT
E9	1	7	ININI VIRUS/CT
E10	0	1	INIPOL/CT
E11	0	2	INIPOL SP 2/CT
E12	0	1	INITIATION/CT

=> e e4+all

E1	0	-->	Iniferters/CT
E2		USE	Chain transfer agents (L) inifers/CT
E3		USE	Polymerization catalysts (L) inifers/CT
***** END***			

← Preferred terms  
✓ Indexed in CAPLUS

=> e e2+all

E1	1014	BT1	Chain transfer agents/CT
E2		-->	Chain transfer agents (L) inifers/CT
E3		OLD	Chain-transfer agents (L) inifers/CT
E4		UF	Inifers/CT
E5		UF	Iniferters/CT
***** END***			

=> e "Polymerization catalysts (L) inifers"+all/ct

E1	54744	BT2	Catalysts/CT
E2	90446	BT1	Polymerization catalysts/CT
E3		-->	Polymerization catalysts (L) inifers/CT
E4		OLD	Chain-transfer agents (L) inifers/CT
E5		UF	Inifers/CT
E6		UF	Iniferters/CT
***** END***			

=&gt; e initiator transfer/ct

E#	FREQUENCY	AT	TERM
--	-----	--	----
E1	0	1	INITIATOR/CT
E2	0	2	INITIATOR ELEMENT/CT
E3	0	-->	INITIATOR TRANSFER/CT
E4	0	2	INITIATOR TRANSFER RIBONUCLEIC ACIDS/CT
E5	0	2	INITIATOR TRANSFER RNA/CT
E6	0	1	INITIATORS/CT
E7	0	1	INITIO/CT
E8	0	2	INIV/CT
E9	0	1	INJECTABLE/CT
E10	0	2	INJECTABLE DRUG DELIVERY SYSTEMS/CT
E11	0	1	INJECTEX/CT
E12	0	2	INJECTEX 21091/CT

*No Index term**for**initiator-transfer agent terminator*

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L12 13 SEA FILE=HCAPLUS ABB=ON PLU=ON INITIATOR TRANSFER AGENT  
TERM?*Free text search*

=&gt; d ibib abs hitind 1-13

L12 ANSWER (1) OF 13 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2002:971578 HCAPLUS

DOCUMENT NUMBER: 138:205379

TITLE: Development of a kinetic model for iniferter  
controlled/"living" free-radical polymerization  
considering diffusion-controlled effectsAUTHOR(S): Vivaldo-Lima, Eduardo; de Jesus Mendoza-Fuentes,  
ArturoCORPORATE SOURCE: Departamento de Ingenieria Quimica, Facultad de  
Quimica, Universidad Nacional Autonoma de Mexico  
(UNAM), Conjunto E, Ciudad Universitaria, Mexico, CP  
04510, Mex.SOURCE: Polymer Reaction Engineering (2002), 10(4), 193-226  
CODEN: PREEEG; ISSN: 1054-3414

PUBLISHER: Marcel Dekker, Inc.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A kinetic model incorporating the effects of diffusion-controlled reactions on INIFERTER (**initiator-transfer agent-terminator**) thermal free-radical polymn. was developed. Mol. wt. development is done using the method of moments. Diffusion-controlled effects are modeled using free-vol. theory. The reactions considered to be diffusion-controlled are: monomer propagation, bimol. radical termination, dormant termination, chain transfer to monomer, and chain transfer to iniferter. Radical generation by thermal self-initiation is also included in the model. Model predictions indicate that diffusion-controlled propagation reduces the "living" behavior of the system, whereas a diffusion-controlled termination enhances its livingness. The livingness of the system is also enhanced by diffusion-controlled dormant termination. When diffusion-controlled termination is important, the simulations show that the overall effect of the diffusion controlled phenomena in iniferter polymn. is to enhance the livingness of the system. Exptl. data from the literature for styrene, and Me methacrylate homopolymns. were used to validate the kinetic model. The agreement is reasonably good.

CC 35-3 (Chemistry of Synthetic High Polymers)

REFERENCE COUNT: 40 THERE ARE 40 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER (2) OF 13 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2002:363381 HCAPLUS

DOCUMENT NUMBER: 137:98873

TITLE: Thermoresponsive Heparin Coating: Heparin Conjugated  
with Poly(N-isopropylacrylamide) at One TerminusAUTHOR(S): Magoshi, Tomoko; Ziani-Cherif, Houcin; Ohya, Shoji;  
Nakayama, Yasuhide; Matsuda, TakehisaCORPORATE SOURCE: Department of Bioengineering, National Cardiovascular  
Center Research Institute, Suita, Osaka, 565-8565,  
Japan

SOURCE: Langmuir (2002), 18(12), 4862-4872  
CODEN: LANGD5; ISSN: 0743-7463  
PUBLISHER: American Chemical Society  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB Heparin terminally grafted with a thermoresponsive polymer, poly(N-isopropylacrylamide) (PNIPAM), was prepd. by sequential steps of chem. modification of one terminal group of heparin, leading to its dithiocarbamylation as an iniferter (**initiator-transfer agent-terminator**), followed by quasi-living photopolymer., thereby producing PNIPAM with a mol. wt. (mol wt) ranging from 2 .times. 10<sup>3</sup> to 1 .times. 10<sup>5</sup> g/mol at the terminus of heparin (PNIPAM-heparin). The lower crit. soln. temp. depended on the mol wt of PNIPAM. Higher-mol-wt PNIPAM-heparin completely pptd. at 34.degree.. The adsorptivity on the poly(ethylene terephthalate) (PET), polystyrene (PST), and segmented polyurethane (PU) films was assessed by wettability measurement and surface chem. compositional anal. by XPS. The temp.-dependent amt. of adsorbed PNIPAM-heparin was quant. detd. by a confocal laser scanning microscope (CLSM) by fluorescence-labeled PNIPAM-heparin. The relative degree of heparin complexation with antithrombin III (ATIII) was assessed based on fluorescence intensity by using the avidin-biotinylated enzyme complex assay technique under a CSLM. Irresp. of the type of polymer films, higher-mol-wt PNIPAM-heparin adsorbed better and was more stable than lower-mol-wt PNIPAM-heparin at 40 and 20.degree., an effect which was more enhanced on a hydrophobic surface (PST) than on polar surfaces (PET and PU). The desorption of PNIPAM-heparin did not occur even in the serum-contg. medium. In addn., higher complexation capability with ATIII was obsd. for higher-mol-wt PNIPAM-heparin probably due to its higher adsorption capability. The desorption of PNIPAM-heparin was obsd. at 20.degree.. Thus, it is concluded that PNIPAM-heparin exhibits thermo-responsiveness of surface biofunctionality.

CC 63-6 (Pharmaceuticals)

Section cross-reference(s): 37

REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER (3) OF 13 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2002:144978 HCAPLUS

DOCUMENT NUMBER: 136:325918

TITLE: Spatio-Resolved Hyperbranched Graft Polymerized Surfaces by Iniferter-Based Photograft Copolymerization

AUTHOR(S): Nakayama, Yasuhide; Sudo, Mika; Uchida, Kingo; Matsuda, Takehisa

CORPORATE SOURCE: Department of Bioengineering, National Cardiovascular Center Research Institute, Suita, Osaka, 565-8565, Japan

SOURCE: Langmuir (2002), 18(7), 2601-2606  
CODEN: LANGD5; ISSN: 0743-7463

PUBLISHER: American Chemical Society  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB Two different types of three-generation hyperbranched graft surfaces with parent chain (stem), daughter chain (branch chain), and granddaughter chain (twig chain) were sequentially prepd. by iniferter (**initiator-transfer agent-terminator**)



)-based quasi-living radical graft copolymn. using photolysis of the benzyl ~~N,N-diethyldithiocarbamate~~ (DC) group. The graft copolymn. of chloromethylstyrene (CMS) with ~~N,N-dimethylacrylamide~~ (DMAAm) or N,N-dimethylaminoethyl methacrylate (DMAEMA) was initiated on DC-derivatized surfaces under UV irradiation, followed by dithiocarbamylation on CMS units in the graft copolymer chains. The repeated cycles of photopolymn./dithiocarbamylation provided successively higher generations of graft architectures. The stepwise progress of the branching stage was evidenced with changes in surface elemental compn. and wettability and visualized by dye staining. From the typical force-vs.-distance curves obtained by at. force microscope measurement, some structural information of graft polymers was estd.

CC 35-4 (Chemistry of Synthetic High Polymers)

REFERENCE COUNT: 43 THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 4 OF 13 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2001:88833 HCAPLUS

DOCUMENT NUMBER: 135:195794

TITLE: Living free-radical block copolymerization by thio-iniferters method

AUTHOR(S): Luo, Binghong; Liao, Kairong; Lu, Zejian

CORPORATE SOURCE: Institute of Polymer Science, Zhongshan University, Canton, 510275, Peop. Rep. China

SOURCE: Gaofenzi Tongbao (2000), (4), 43-48, 70

CODEN: GATOE5; ISSN: 1003-3726

PUBLISHER: Gaofenzi Tongbao Bianji Weiyuanhui

DOCUMENT TYPE: Journal; General Review

LANGUAGE: Chinese

AB A review with 41 refs. is given on living free-radical block copolymn. by thio-Iniferters (~~initiator-transfer agent-terminator~~) method including the mechanism of living free-radical polymn. by thio-Iniferters method, the synthesis of macro initiators using thio-Iniferters, and their applications in prepn. of block copolymers and multiblock copolymers.

CC 35-0 (Chemistry of Synthetic High Polymers)

L12 ANSWER 5 OF 13 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2000:818814 HCAPLUS

DOCUMENT NUMBER: 134:326820

TITLE: UV free-radical polymerization for micropatterning poly(ethylene glycol)-containing films

AUTHOR(S): Ward, Jennifer H.; Gomez, Rafael; Bashir, Rashid; Peppas, Nicholas A.

CORPORATE SOURCE: School of Chemical Engineering, Purdue University, West Lafayette, IN, 47907-1283, USA

SOURCE: Proceedings of SPIE-The International Society for Optical Engineering (2000), 4097(Complex Mediums), 221-228

CODEN: PSISDG; ISSN: 0277-786X

PUBLISHER: SPIE-The International Society for Optical Engineering

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Novel techniques are developed for the prepn. of micropatterned structures from thin films prepd. by the block copolymn. of monomers using UV free-radical polymns. The process involves polymg. the first monomer layer in the presence of an iniferter (~~initiator-~~

**transfer agent-terminator**) with a dithiocarbamate group, i.e., tetraethylthiuram disulfide, to make a photosensitive polymer. Upon application of the second monomer layer on the first polymer layer and irradiation, a copolymer is formed between the two layers. Patterns are created on the films by applying a mask and selectively irradiating the surface. Polyethylene glycol methacrylate and dimethacrylate are successfully polymerized onto a highly crosslinked material of polyethylene glycol dimethacrylate. Various patterns were created to determine the precision that can be achieved with this method. Preliminary results show that the patterns in the second monomer layer can be from 5  $\mu\text{m}$  to 100  $\mu\text{m}$  thick, with feature size as small as 5  $\mu\text{m}$ , allowing the use of this material in high aspect ratio structures for micro-fluidics. In addition, applications of this type of material are also in bioMEMS, biomaterials, and biosensors for the selective adhesion of cells and proteins.

CC 35-4 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 9

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 6 OF 13 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1994:703077 HCAPLUS

DOCUMENT NUMBER: 121:303077

TITLE: A novel surface photo-graft polymerization method for fabricated devices

AUTHOR(S): Nakayama, Yasuhide; Matsuda, Takehisa; Irie, Masahiro  
CORPORATE SOURCE: Dep. Bioeng., Natl. Cardiovasc. Cent. Res. Inst.,  
Suita, 565, Japan

SOURCE: ASAIO Journal (1993), 39(3), M542-M544  
CODEN: AJOUET; ISSN: 1058-2916

DOCUMENT TYPE: Journal

LANGUAGE: English

AB This paper presents a new photo-graft polymerization method that permits surface modification of complex shaped devices. The principle is based on photochemistry of the dithiocarbamate group, as a polymer **initiator-transfer agent-terminator** (iniferter), which is capable of photochemical dissociation into a radical pair. The procedure is as follows: first, coating of a photosensitive polymer on a substrate, and subsequent UV (UV) light irradiation in the presence of a monomer. The photosensitive polymer prepared was a radical copolymer of styrene and vinylbenzyl N,N-diethyldithiocarbamate. Surface graft polymerization of a water soluble monomer (N,N-dimethylacrylamide) on poly(ethylene terephthalate) pre-coated with the photosensitive polymer was achieved. Because the photopolymerization proceeded via a living radical polymerization, the control of molecular weight of the grafted polymer was feasible. This was quantitatively observed by graft polymerization on a quartz crystal microbalance (QCM) that can detect the weight increase with the sensitivity of nanogram order. Two-dimensional patterning of cultured cells was demonstrated to show how surface grafted polymerization is limited on UV light irradiation portions with dimensionally micron order precision.

CC 42-3 (Coatings, Inks, and Related Products)

Section cross-reference(s): 35

L12 ANSWER 7 OF 13 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1994:681372 HCAPLUS

DOCUMENT NUMBER: 121:281372

TITLE: Siloxane iniferters and their use in making

vinyl/siloxane block copolymers  
AUTHOR(S): Kumar, R. C.; Andrus, M. H. Jr.; Dueltgen, R. R.;  
Mazurek, M. H.  
CORPORATE SOURCE: Spec. Mater. Div., 3M Cent., St. Paul, MN, 55144-1000,  
USA  
SOURCE: Polymer Preprints (American Chemical Society, Division  
of Polymer Chemistry) (1994), 35(1), 786-7  
CODEN: ACPPAY; ISSN: 0032-3934  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB Methods for the prepn. of siloxane iniferters (**initiator-  
transfer agent-terminator**) are described and  
use of the iniferters in prepg. block and graft copolymers from vinyl  
compds. is discussed.

CC 35-7 (Chemistry of Synthetic High Polymers)

L12 ANSWER 8 OF 13 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1990:601110 HCAPLUS

DOCUMENT NUMBER: 113:201110

TITLE: S-Phenyl thiobenzoate as a new sulfur-containing  
photoinitiator: a product, laser flash photolysis and  
photopolymerization study

AUTHOR(S): Tomioka, Hideo; Takimoto, Yasuyuki; Kawabata, Masaki;  
Harada, Masahiko; Fouassier, Jean Pierre; Ruhlmann,  
Denis

CORPORATE SOURCE: Fac. Eng., Mie Univ., Tsu, 514, Japan

SOURCE: Journal of Photochemistry and Photobiology, A:  
Chemistry (1990), 53(3), 359-72  
CODEN: JPPCEJ; ISSN: 1010-6030

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Photolysis of S-phenyl thiobenzoate (I) in benzene gives benzaldehyde,  
di-Ph sulfide and biphenyl; these are formed from .alpha. scission of the  
excited triplet state of I which yields benzoyl and thiyl radicals. The  
aryl substituent has a significant influence on the efficiency of  
photocleavage. The benzoyl radical is detected by time-resolved laser  
spectroscopy and the results of kinetic anal. are in complete agreement  
with those obtained from the product investigation. Photopolymerization of Ph  
diethylene glycol acrylate in the presence of I results in the formation  
of a polymer whose yield is roughly correlated with the photoreactivity of  
I. The effect of initiator concn. on the photopolymerization efficiency suggests  
that I acts as an iniferter (**initiator-transfer  
agent-terminator**), with the benzoyl radical as initiator  
and the thiyl radical as terminator.

CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other  
Reprographic Processes)  
Section cross-reference(s): 35

L12 ANSWER 9 OF 13 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1988:22342 HCAPLUS

DOCUMENT NUMBER: 108:22342

TITLE: Living radical polymerization of methyl methacrylate  
with tetraphenylsuccinodinitrile as a thermal  
iniferter

AUTHOR(S): Otsu, Takayuki; Matsumoto, Akikazu; Tazaki, Toshinori

CORPORATE SOURCE: Dep. Appl. Chem., Osaka Univ., Osaka, 558, Japan

SOURCE: Memoirs of the Faculty of Engineering, Osaka City

University (1986), 27, 137-42  
CODEN: MFEOAR; ISSN: 0078-6659

DOCUMENT TYPE: Journal  
LANGUAGE: English

AB The bulk polymn. of Me methacrylate (I) at 60-80.degree. in the presence of tetraphenylsuccinodinitrile (II) proceeded via a mechanism similar to a previously proposed living radical polymn. model. The reactivity of I in the presence of II was lower than that of I in the presence of AIBN. The degree of increase in mol. wt. against conversion was quite small and decreased with increasing polymn. temp. indicating some side reactions leading to deactivation of the active chain end. The oligomer formed during the induction period served as an iniferter (**initiator-transfer agent-terminator**).

CC 35-3 (Chemistry of Synthetic High Polymers)

L12 ANSWER 10 OF 13 HCAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 1986:89032 HCAPLUS  
DOCUMENT NUMBER: 104:89032  
TITLE: Synthesis, reactivity, and role of 4-vinylbenzyl N,N-diethyldithiocarbamate as a monomer-iniferter in radical polymerization

AUTHOR(S): Otsu, Takayuki; Yamashita, Keiji; Tsuda, Kazuichi  
CORPORATE SOURCE: Fac. Eng., Osaka City Univ., Osaka, 558, Japan  
SOURCE: Macromolecules (1986), 19(2), 287-90  
CODEN: MAMOBX; ISSN: 0024-9297

DOCUMENT TYPE: Journal  
LANGUAGE: English

AB 4-Vinylbenzyl N,N-diethyldithiocarbamate (I) [99798-43-3] was prep'd. and used as a monomer-iniferter (**initiator-transfer agent-terminator**). In the absence of light, I polym'd. easily with AIBN via an ordinary radical polymn. mechanism, and its reactivity was similar to that of styrene (II). I homopolymer [99798-46-6] and its copolymers [99798-47-7] with II acted as excellent photoiniferters of living radical polymn. in a homogeneous system to give graft copolymers consisting of benzene-sol. and -insol. fractions, in which the amt. of the latter increased when the I units in the copolymer photoiniferter used increased. In the presence of UV light, I polym'd. without a radical initiator, leading to benzene-sol. and -insol. polymers as a result of participation of the styryl double bond in the polymers produced. However, the photopolymn. of II with a catalytic amt. of I as a photoiniferter gave a benzene-sol. polymer contg. a styryl double bond and a N,N-diethyldithiocarbamyl group at the polymer chain ends, i.e., a macromer-iniferter.

CC 35-3 (Chemistry of Synthetic High Polymers)

L12 ANSWER 11 OF 13 HCAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 1985:167246 HCAPLUS  
DOCUMENT NUMBER: 102:167246  
TITLE: Polymer design by iniferter technique in radical polymerization: synthesis of AB and ABA block copolymers containing random and alternating copolymer sequences

AUTHOR(S): Otsu, Takayuki; Kuriyama, Akira  
CORPORATE SOURCE: Fac. Eng., Osaka City Univ., Osaka, 558, Japan  
SOURCE: Polymer Journal (Tokyo, Japan) (1985), 17(1), 97-104  
CODEN: POLJB8; ISSN: 0032-3896

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The iniferter (~~initiator-transfer agent-terminator~~) technique was applied to the synthesis of the AB and ABA block copolymers contg. various random and alternating copolymer sequences. Monomeric photoiniferters used were of general formula  $\text{Ar}[\text{CH}_2\text{SC}(\text{:S})\text{NEt}_2]_x$  [Ar = Ph, x = 1, (I) [3052-61-7]; Ar = 1,4-C<sub>6</sub>H<sub>4</sub>, x = 2, (II) [89964-93-2]; and Ar = 1,2,4,5-C<sub>6</sub>H<sub>2</sub>, x = 4, (III) [92687-20-2]]. Polymeric photoiniferters were prepd. by photolysis of I, II, and III. The photopolymns. with I and II proceeded via a living radical mechanism III and gave sol. mono- and bifunctional polymers, resp. However, III induced living radical polymn. of styrene with gelation. When various polymers and copolymers obtained by I and II were used as polymeric photoiniferters, the AB and ABA block copolymers contg. random copolymer sequences were obtained in high yields. Similarly, the alternating copolymn. of iso-Bu vinyl ether with maleic anhydride in the presence of alternating copolymers (e.g., styrene and di-iso-Pr fumarate), which were obtained with I and II, as polymeric photoiniferters gave the AB and ABA block copolymers consisting of alternating copolymer sequences. III and the polymers and copolymers obtained by III could also act as an excellent crosslinking agent.

CC 35-4 (Chemistry of Synthetic High Polymers)

L12 ANSWER 12 OF 13 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1982:424282 HCAPLUS

DOCUMENT NUMBER: 97:24282

TITLE: Living radical polymerizations in homogeneous solution by using organic sulfides as photoiniferters

AUTHOR(S): Otsu, Takayuki; Yoshida, Masatoshi; Kuriyama, Akira

CORPORATE SOURCE: Fac. Eng., Osaka City Univ., Osaka, 558, Japan

SOURCE: Polymer Bulletin (Berlin, Germany) (1982), 7(1), 45-50  
CODEN: POBUDR; ISSN: 0170-0839

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Polystyrene was prepd. by living radical polymn. in homogeneous soln. using 4 org. sulfide ~~initiator-transfer agent-terminators~~ (photoiniferters). styrene [100-42-5] Photopolymd, with diphenyl disulfide (I) [882-33-7], tetraethylthiuram disulfide [97-77-8], benzyl diethyldithiocarbamate [3052-61-7] and 2-phenylethyl diethyldithiocarbamate [3052-60-6] gave polymers with yields and av.-mol. wts. increased as a function of the reaction time. These polymns. proceeded via a living radical mechanism. When these photoiniferters except I were used, the propagating polymer chain end was always the Et<sub>2</sub>NCSS group, which can further photodissoc. into a reactive propagating radical and a less reactive small radical Et<sub>2</sub>NCSS.cntdot. in order to result in successive insertion of monomer mols. into the dissocd. bond.

CC 35-3 (Chemistry of Synthetic High Polymers)

L12 ANSWER 13 OF 13 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1982:123418 HCAPLUS

DOCUMENT NUMBER: 96:123418

TITLE: Role of ~~initiator-transfer agent-terminator~~ (iniferter) in radical polymerizations: polymer design by organic disulfides as iniferters

AUTHOR(S): Otsu, Takayuki; Yoshida, Masatoshi

CORPORATE SOURCE: Fac. Eng., Osaka City Univ., Osaka, 558, Japan

SOURCE: Makromolekulare Chemie, Rapid Communications (1982),  
3(2), 127-32  
CODEN: MCRCD4; ISSN: 0173-2803

DOCUMENT TYPE: Journal

LANGUAGE: English

AB tetraethylthiuran disulfide [97-77-8] And dibenzoyl disulfide [644-32-6]  
were used as iniferters in polymn. of styrene and Me methacrylate, giving  
thiofunctionally terminated polymers. Photolysis of these polymers in the  
presence of monomers at 30.degree. provided block copolymn.

CC 35-3 (Chemistry of Synthetic High Polymers)

=&gt; d que

L9 182 SEA FILE=HCAPLUS ABB=ON PLU=ON "CHAIN TRANSFER AGENTS (L)  
INIFERS"+OLD/CT  
L10 185 SEA FILE=HCAPLUS ABB=ON PLU=ON "POLYMERIZATION CATALYSTS (L)  
INIFERS"+OLD/CT  
L12 13 SEA FILE=HCAPLUS ABB=ON PLU=ON INITIATOR TRANSFER AGENT  
TERM?  
L13 275 SEA FILE=HCAPLUS ABB=ON PLU=ON INIFERTER  
L14 336 SEA FILE=HCAPLUS ABB=ON PLU=ON L9 OR L10 OR L13  
L15 324 SEA FILE=HCAPLUS ABB=ON PLU=ON L14 NOT L12

=&gt; d ibib abs hitind 1-5 314-324

*only a few examples printed*

L15 ANSWER 1 OF 324 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2003:286842 HCAPLUS

TITLE: Research development of organic sulfides in living/controlled free-radical polymerization.

AUTHOR(S): Daoben, Hua; Ruke, Bai

CORPORATE SOURCE: Department of Polymer Science and Engineering,  
University of Science and Technology of China, Hefei,  
230026, Peop. Rep. China

SOURCE: Huaxue Tongbao (2003), 66(3), 162-168

CODEN: HHTPAU; ISSN: 0441-3776

PUBLISHER: Huaxue Tongbao Bianjibu

DOCUMENT TYPE: Journal

LANGUAGE: Chinese

AB The present paper reviews the recent progresses of org. sulfides in living free-radical polymn. such as **Iniferter**, RAFT and 60Co .gamma.-irradn. polymn. The mechanism and living characteristics of them are discussed, resp. In 1980's, some sulfur compds. contg. N,N-diethyldithiocarbamoyl group was firstly used as photoiniferter in living free-radical polymn., which has some living behaviors. but the mol. wt. distribution becomes broader with the conversion. RAFT uses the dithiocarbamate or trithiocarbonate derivs. as transfer agents, the polymn. has excellent living behavior, which is an important breakthrough in the development of living free-radical polymn. Recently dithiobenzoic acid and dibenzyl trithiocarbonate are used in living free-radical polymns. under 60Co .gamma.-irradn. at room temp., many monomers have been investigated. this is another new development.

CC 35 (Chemistry of Synthetic High Polymers)

L15 ANSWER 2 OF 324 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2003:191841 HCAPLUS

TITLE: Compatibilization efficacy of poly(isoprene-butyl acrylate) block copolymers in natural/acrylic rubber blends

AUTHOR(S): Wootthikanokkhan, J.; Tongrubai, B.

CORPORATE SOURCE: Division of Materials Technology, School of Energy and Materials, King Mongkut's University of Technology, Bangkok, 10140, Thailand

SOURCE: Journal of Applied Polymer Science (2003), 88(4), 921-927

CODEN: JAPNAB; ISSN: 0021-8995

PUBLISHER: John Wiley &amp; Sons, Inc.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Poly(isoprene-Bu acrylate) block copolymers with a variety of mol. wts. and compns. were prep'd. via a controlled free-radical polymn. with an **iniferter**. Subsequently, the block copolymers were used as compatibilizers in natural/acrylic rubber blends. Scanning electron micrographs revealed a cocontinuous morphol. in the case of the normal blends with a low natural rubber content (20 wt %), whereas the blends that contained more natural rubber showed a dispersed-particle morphol. When the rubbers were blended with 5 wt % block copolymer, the particle size decreased, and the tensile strength of the resulted blends increased, regardless of the block copolymer characteristics. For the blend that exhibited a cocontinuous morphol., the most effective compatibilizer was the block copolymer with an av. mol. wt. of 22,000 g/mol, contg. mainly (87%) polyisoprene block.

CC 39 (Synthetic Elastomers and Natural Rubber)

REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 3 OF 324 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2002:942118 HCAPLUS

DOCUMENT NUMBER: 138:188094

TITLE: Use of fluorinated organic compounds in living radical polymerizations

AUTHOR(S): Lacroix-Desmazes, Patrick; Ameduri, Bruno; Boutevin, Bernard

CORPORATE SOURCE: UMR-CNRS 5076, Laboratoire de Chimie Macromoleculaire, Ecole Nationale Supérieure de Chimie de Montpellier, Montpellier, 34296, Fr.

SOURCE: Collection of Czechoslovak Chemical Communications (2002), 67(10), 1383-1415  
CODEN: CCCCAK; ISSN: 0010-0765

PUBLISHER: Institute of Organic Chemistry and Biochemistry, Academy of Sciences of the Czech Republic

DOCUMENT TYPE: Journal; General Review

LANGUAGE: English

AB This review aims at illustrating the contribution of fluorinated org. compds. in living radical polymn. (LRP) through the use of fluorinated initiators (dithiocarbamates, xanthates, tetraphenylethanes, alkoxyamines, fluorinated alkyl halides, and dithioesters) or other fluorinated mols. (ligands, solvents). Controlled/LRP is a field of special interest because it allows tailoring of well defined macromol. architectures such as telechelic, block, graft, or star copolymers. Since the eighties, several techniques have been reported, such as the **iniferter** method, nitroxide-mediated radical polymn., atom transfer radical polymn., iodine transfer polymn., and reversible addn.-fragmentation chain transfer. Another point depicts the LRP of various fluorinated monomers (methacrylates, acrylates, styrenics, and alkenes). Fluorinated block and graft copolymers prep'd. by LRP have been reported.

CC 35-0 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 37

REFERENCE COUNT: 193 THERE ARE 193 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 4 OF 324 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2002:921489 HCAPLUS

DOCUMENT NUMBER: 138:14465



TITLE: Preparation of ultraviolet ray curable pressure-sensitive adhesive composition and pressure-sensitive adhesive sheet  
 INVENTOR(S): Miyata, Takeshi; Kobayashi, Masamori  
 PATENT ASSIGNEE(S): Lintec Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002348543	A2	20021204	JP 2001-160967	20010529

PRIORITY APPLN. INFO.: JP 2001-160967 20010529

AB Title adhesive with high adhesion and cohesion and stable phys. properties comprises adhesive mean component, UV-curable resin, and light **iniferter**-based photopolymer initiator. Thus a pressure-sensitive adhesive sheet was prepd. by coating an adhesive compn. comprising Bu acrylate-acrylic acid copolymer, trimethylolpropane triacrylate and N,N-diethyldithiocarbamate onto a polyethylene terephthalate film, drying, then covering with an UV permeable releasing sheet, 450 mJ/cm<sup>2</sup> UV ray irradiating to crosslink the adhesive layer, showing adhesive strength 17.5 N/25 mm and good holding strength with no odor.

IC ICM C09J004-00  
 ICS C08F002-44; C08F002-50; C08F265-06; C09J007-02; C09J133-06

CC 38-3 (Plastics Fabrication and Uses)

IT Chain transfer agents  
 Polymerization catalysts  
 (inifers; prepn. of UV-curable pressure-sensitive adhesive compn. and pressure-sensitive adhesive sheet)

L15 ANSWER 5 OF 324 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2002:868579 HCAPLUS

DOCUMENT NUMBER: 138:137665

TITLE: Synthesis of AB and ABA type block copolymers of vinyl chloride using **iniferter** technique

AUTHOR(S): Oki, Yoshitaka; Okamoto, Yoshio

CORPORATE SOURCE: Joint Research Center for Precision Polymerization (JRCP) -Japan Chemical Innovation Institute (JCII), Graduate School of Engineering, Nagoya University, Nagoya, 464-8603, Japan

SOURCE: Polymer Journal (Tokyo, Japan) (2002), 34(10), 736-741  
 CODEN: POLJB8; ISSN: 0032-3896

PUBLISHER: Society of Polymer Science, Japan

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The photopolymer. of vinyl chloride (VC) with benzyl N,N-diethyldithiocarbamate (BDC) or p-xylylene bis(N,N-diethyldithiocarbamate) (XDC) was carried out in 1,2-dichloroethane at 30.degree.C. From the 1H NMR spectra, these poly(vinyl chloride)s (PVC) were found to contain mono- or di-functional polymers which can be used for synthesizing the AB type or ABA type block copolymers, resp. The photocopolymer. of the mono-functional PVC with styrene (St) or vinyl acetate (VAc) was carried out in cyclohexanone at 30.degree.C. The obtained copolymers were the AB type block copolymers of VC with St or VAc. The photocopolymer. of the

di-functional PVC with St in cyclohexanone at 30.degree.C gave an ABA type block copolymer of VC and St.

CC 35-4 (Chemistry of Synthetic High Polymers)

ST vinyl chloride block copolymer prepn benzyl diethyldithiocarbamate **iniferter**; acetate vinyl block copolymer prepn dithiocarbamate **iniferter**; styrene vinyl chloride block copolymer prepn dithiocarbamate **iniferter**; xylylene bisdiethyldithiocarbamate **iniferter** vinyl chloride block copolymer prepn

IT 3052-61-7DP, Benzyl N,N-diethyldithiocarbamate, reaction products with PVC 9002-86-2DP, PVC, reaction products with dithiocarbamates 89964-93-2DP, p-Xylylenebis(N,N-diethyldithiocarbamate), reaction products with PVC  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (synthesis of AB and ABA type block copolymers of vinyl chloride using dithiocarbamate **iniferters**)

IT 108146-91-4P, Styrene-vinyl chloride block copolymer 124378-22-9P, Vinyl acetate-vinyl chloride block copolymer  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (synthesis of AB and ABA type block copolymers of vinyl chloride using dithiocarbamate **iniferters**)

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 314 OF 324 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1985:25083 HCAPLUS

DOCUMENT NUMBER: 102:25083

TITLE: New telechelic polymers and sequential copolymers by polyfunctional initiator-transfer agents (inifers).  
 XLI. Kinetic and reactivity studies on sterically hindered inifers

AUTHOR(S): Santos, Raquel; Fehervari, Agota; Kennedy, Joseph P.  
 CORPORATE SOURCE: Inst. Polym. Sci., Univ. Akron, Akron, OH, 44325, USA  
 SOURCE: Journal of Polymer Science, Polymer Chemistry Edition (1984), 22(10), 2685-97  
 CODEN: JPLCAT; ISSN: 0449-296X

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The kinetics of chain transfer to the bifunctional initiating and transfer agents (binifers) 1,4-bis(2-chloro-2-propyl)benzene (I) [7374-80-3], 1,3-bis(2-chloro-2-propyl)-5-tert-butylbenzene (II) [89700-88-9], and 1,3-bis(2-chloro-2-propyl)-4,6-dimethylbenzene (III) [94054-88-3] in the polymn. of isobutylene [115-11-7] was investigated. Chain transfer to monomer was absent up to -20.degree. in MeCl/n-hexane and CH<sub>2</sub>Cl<sub>2</sub>/n-hexane mixts. using the II/BCl<sub>3</sub> binifer system. Chain transfer consts. (CI) to II and the ratios of the rate consts. of termination and propagation detd. at -30.degree. to -80.degree. in MeCl/n-hexane mixts. and pure MeCl solvent are reported, and E<sub>tr</sub>, I - E<sub>p</sub> and E<sub>t</sub> - E<sub>p</sub> (where E<sub>tr</sub>, I, E<sub>p</sub>, and E<sub>t</sub> are activation energies of chain transfer to binifer, propagation, and termination, resp.) were calcd. Chain transfer consts. to I and III were detd. by the use of pure MeCl diluent at -50.degree.. The chain transfer reactivity of 5 different inifers was discussed and compared based on CI values obtained under identical conditions, with special regard to the new, sterically hindered binifer III of extraordinary reactivity.

CC 35-3 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 67

IT **Polymerization catalysts**

(bifunctional **inifers**, for isobutylene, chain transfer

kinetics in relation to)

L15 ANSWER 315 OF 324 HCAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 1985:7147 HCAPLUS  
DOCUMENT NUMBER: 102:7147  
TITLE: Living radical polymerization in homogeneous system by  
using **iniferter**: design of block copolymers  
AUTHOR(S): Otsu, T.; Kuriyama, A.  
CORPORATE SOURCE: Fac. Eng., Osaka City Univ., Osaka, 558, Japan  
SOURCE: Journal of Macromolecular Science, Chemistry (1984),  
A21(8-9), 961-77  
CODEN: JMCHBD; ISSN: 0022-233X

DOCUMENT TYPE: Journal  
LANGUAGE: English

AB Benzyl N-ethyldithiocarbamate (I) [28249-01-6] and p-xylylene  
bis(N-ethyldithiocarbamate) (II) [93522-33-9] were prep'd., and used as  
mono- and bifunctional photoiniferters, resp., of the polymn. of styrene  
and Me methacrylate. These photopolymns. were performed via a living  
radical polymn. mechanism in a homogeneous system. The polymers obtained  
by I and II still contained 1 and 2 reactive N-ethyldithiocarbamate end  
groups, resp., bonded at their chain ends. When these polymers reacted  
with nucleophiles and Cu<sup>2+</sup> the chain extension reactions occurring  
depended on their functionality. By using the polymers obtained by I and  
II as mono- and bifunctional polymeric photoiniferters, AB and ABA block  
copolymers were also obtained, resp. Similar results were obtained by  
using benzyl N,N-diethyldithiocarbamate [3052-61-7] and p-xylylene  
bis(N,N-diethyldithiocarbamate) [89964-93-2] as mono- and bifunctional  
photoiniferters, resp. These results were also compared and discussed.

CC 35-3 (Chemistry of Synthetic High Polymers)

ST living radical photopolymn **iniferter**; methacrylate styrene block  
copolymn

IT Polymerization  
(block, radical, of styrene and Me methacrylate, **iniferters**  
for)

IT 25034-86-QP

RL: SPN (Synthetic preparation); PREP (Preparation)  
(block, prepn. of, **iniferters** for)

L15 ANSWER 316 OF 324 HCAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 1984:611775 HCAPLUS  
DOCUMENT NUMBER: 101:211775  
TITLE: Some detailed observations on the inifer technique  
AUTHOR(S): Nuyken, O.; Pask, S. D.; Vischer, A.; Walter, M.  
CORPORATE SOURCE: TU Munchen, Garching, D-8046, Fed. Rep. Ger.  
SOURCE: Cationic Polym. Relat. Processes, Proc. Int. Symp.,  
6th (1984), Meeting Date 1983, 35-42. Editor(s):  
Goethals, E. J. Academic: London, UK.  
CODEN: 52IJAA

DOCUMENT TYPE: Conference  
LANGUAGE: English

AB The mechanism involved in inifer polymn. was exam'd. with PhCMe<sub>2</sub>Cl  
[934-53-2], 1,4-(ClCMe<sub>2</sub>)<sub>2</sub>C<sub>6</sub>H<sub>4</sub> [7374-80-3], or 1,3,5-(ClCMe<sub>2</sub>)<sub>3</sub>C<sub>6</sub>H<sub>3</sub>  
[77367-66-9] used as the inifer in the polymn. of 2-methylpropene  
[115-11-7] in the presence of VCl<sub>3</sub>. The inifer systems had different  
reactivities. The inifer polymns. were distinguished by self-ionization  
of BCl<sub>3</sub> and an equil. nature for the termination reaction.

CC 35-3 (Chemistry of Synthetic High Polymers)

IT **Polymerization catalysts**  
(boron trichloride with (chloropropyl)benzene **inifers**, for isobutene)

IT **Chain-transfer agents**  
(**inifers**, (chloropropyl)benzenes, in isobutene polymn.)

L15 ANSWER 317 OF 324 HCAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 1984:611774 HCAPLUS  
DOCUMENT NUMBER: 101:211774  
TITLE: Equilibria and cationic polymerization  
AUTHOR(S): Pask, S. D.; Nuyken, O.; Vischer, A.; Walter, M.  
CORPORATE SOURCE: TU Muenchen, Garching, D-8046, Fed. Rep. Ger.  
SOURCE: Cationic Polym. Relat. Processes, Proc. Int. Symp., 6th (1984), Meeting Date 1983, 25-33. Editor(s): Goethals, E. J. Academic: London, UK.  
CODEN: 52IJAA

DOCUMENT TYPE: Conference  
LANGUAGE: English

AB An exptl. and theor. study of the various binary ionic equil. in cationic polymn. systems was used to explain some results of polymns. of 2-methylpropene [115-11-7] in the presence of BCl<sub>3</sub> and **inifers**, i.e., ClCMe<sub>2</sub>Ph [934-53-2], 1,4-(ClCMe<sub>2</sub>)<sub>2</sub>C<sub>6</sub>H<sub>4</sub> [7374-80-3], and 1,3,5-(ClCMe<sub>2</sub>)<sub>3</sub>C<sub>6</sub>H<sub>3</sub> [77367-66-9].

CC 35-3 (Chemistry of Synthetic High Polymers)  
Section cross-reference(s): 68

IT **Chain-transfer agents**  
(**inifers**, (chloropropyl)benzenes, equil. in cationic polymn. of isobutene in presence of)

IT **Polymerization catalysts**  
(cationic, contg. **inifers**, for isobutene)

L15 ANSWER 318 OF 324 HCAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 1984:210540 HCAPLUS  
DOCUMENT NUMBER: 100:210540  
TITLE: New telechelic polymers and sequential copolymers by polyfunctional initiator-transfer agents "**inifers**". XXXIX. Semicontinuous preparation of end-reactive isobutylene oligomers by the **inifer** technique  
AUTHOR(S): Faust, Rudolf; Fehervari, Agota; Kennedy, Joseph P.  
CORPORATE SOURCE: Inst. Polym. Sci., Univ. Akron, Akron, OH, 44325, USA  
SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (1984), 25(1), 133-4  
CODEN: ACPPAY; ISSN: 0032-3934

DOCUMENT TYPE: Journal  
LANGUAGE: English

AB Sym. telechelic polyisobutylenes were prep'd. with the use of **inifers** and a novel semicontinuous method in which a monomer-**inifer** feed was added at a continuous const. rate to a stirred, dil., BCl<sub>3</sub> charge in order to maintain a const. reagent concn. during the polymn. The method gave well defined telechelic polymers contg. identical end groups, essentially theor. functionalities, and nearly theor. mol. wt. dispersities. The method gave telechelic, low-mol.-wt. polymers at complete monomer conversion.

CC 35-4 (Chemistry of Synthetic High Polymers)

IT **Chain-transfer agents**  
(**inifers**, prepn. of telechelic polyisobutylenes in presence of, semicontinuous)

L15 ANSWER 319 OF 324 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1984:192331 HCAPLUS

DOCUMENT NUMBER: 100:192331

TITLE: Living mono- and biradical polymerizations in homogeneous system synthesis of AB and ABA type block copolymers

AUTHOR(S): Otsu, Takayuki; Kuriyama, Akira

CORPORATE SOURCE: Fac. Eng., Osaka City Univ., Osaka, 558, Japan

SOURCE: Polymer Bulletin (Berlin, Germany) (1984), 11(2), 135-42

CODEN: POBUDR; ISSN: 0170-0839

DOCUMENT TYPE: Journal

LANGUAGE: English

AB To design the structure of the block copolymers by radical polymn. benzyl N,N-diethyldithiocarbamate (I) [3052-61-7] and P-xylylene N,N-diethyldithiocarbamate (II) [89964-93-2] were used as mono- and bifunctional photo-**iniferters**, resp., for the polymns. of styrene and Me methacrylate. These polymns. proceeded via a living radical mechanism. When the ratio of the concn. of the diethyldithiocarbamate group to that of a photo-**iniferter** mol. was kept const., the yields of the polymers obtained by both I and II were identical, and their mol. wts. (M) by II were 2 times as high as those by I. This observation strongly suggested that the polymns. by I and II were performed by living mono- and biradical mechanisms, resp. By using the polymers obtained by I and II as polymeric photo-**iniferters** of the polymn. of second monomers, the AB and ABA-type block copolymers [25034-86-0] were obtained, resp.

CC 35-3 (Chemistry of Synthetic High Polymers)

ST xylylene diethyldithiocarbamate **iniferter** photopolymn; benzyl diethyldithiocarbamate **iniferter** photopolymn; methacrylate block photopolymn **iniferter**; styrene block photopolymn **iniferter**; chain transfer agent diethyldithiocarbamate; terminator chain diethyldithiocarbamate; catalyst photopolymn diethyldithiocarbamate

IT Polymerization

(block, living, photochem., radical, of Me methacrylate with styrene in presence of diethyldithiocarbamate **iniferters**, mechanism of)

IT 25034-86-0P

RL: PREP (Preparation)

(block, manuf. of, in presence of diethyldithiocarbamate **iniferters**, mechanism of)

L15 ANSWER 320 OF 324 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1984:86176 HCAPLUS

DOCUMENT NUMBER: 100:86176

TITLE: Polymer design using **iniferters**. V. Synthesis of block copolymers with organic sulfur compounds as **iniferters**

AUTHOR(S): Otsu, Takayuki; Kuriyama, Akira; Yoshida, Masatoshi

CORPORATE SOURCE: Fac. Eng., Osaka City Univ., Osaka, 558, Japan

SOURCE: Kobunshi Ronbunshu (1983), 40(10), 583-8

CODEN: KBRBA3; ISSN: 0386-2186

DOCUMENT TYPE: Journal

LANGUAGE: Japanese

AB Tetraethylthiuram disulfide (I) [97-77-8], PhSSPh [882-33-7], Ph2S [139-66-2], and BzSSBz [644-32-6] were used as **iniferters** (i.e., radical initiators which also act as chain transfer and termination

agents) were used in the photopolymerization of vinyl monomers to give polymers with **iniferter** fragments bonded at their chain ends, which could then be used to synthesize block copolymers. Photopolymerization of methyl methacrylate (II) with I, and of styrene with Ph<sub>2</sub>S, were observed to proceed via a living-radical mechanism. Similar results were also found for photopolymerization of styrene with I and PhSSPh. However, photopolymerization of II with PhSSPh and Ph<sub>2</sub>S, and of styrene or II with BzSSBz, were found to deviate from the living-radical mechanism. When the styrene polymers obtained from systems involving a living-radical mechanism were used as polymeric **iniferters**, the photopolymerization of II also proceeded via a living radical mechanism, and block copolymers were produced with high block efficiency. However, photopolymerization with polymeric **iniferters** obtained from the nonliving-radical mechanism systems gave block copolymers with low efficiency.

CC 35-3 (Chemistry of Synthetic High Polymers)

ST sulfide org **iniferter** photopolymerization; radical initiator org sulfide; chain transfer agent org sulfide; terminator chain org sulfide; methacrylate block polymer initiator; styrene block polymer initiator; ethylthiuram disulfide **iniferter** photopolymerization; phenyl sulfide **iniferter** photopolymerization; benzoyl disulfide **iniferter** photopolymerization

L15 ANSWER 321 OF 324 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1983:540535 HCAPLUS

DOCUMENT NUMBER: 99:140535

TITLE: New linear and network polymers by carbocationic processes

AUTHOR(S): Kennedy, Joseph P.

CORPORATE SOURCE: Inst. Polym. Sci., Univ. Akron, Akron, OH, 44325, USA

SOURCE: Proc. IUPAC, I. U. P. A. C., Macromol. Symp., 28th (1982), 198. Int. Union Pure Appl. Chem.: Oxford, UK. CODEN: 50DXAF

DOCUMENT TYPE: Conference

LANGUAGE: English

AB The inifer (initiator-transfer agent) concept for carbocationic reactions is discussed, and its application for the synthesis of telechelic prepolymers such as polyisobutylene (I) diols and triols, phenol-terminated I, cyclopentadienylated I, polyesters, etc. is described. These intermediates can be converted into useful networks (polyurethanes, ionomers) and segmented polymer (thermoplastic elastomers).

CC 35-8 (Chemistry of Synthetic High Polymers)

IT Chain-transfer agents

(**inifers**, in prepn. of telechelic prepolymers)

L15 ANSWER 322 OF 324 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1983:54578 HCAPLUS

DOCUMENT NUMBER: 98:54578

TITLE: Polymerization of isobutene by the inifer technique. 3. The effect of 2,6-di-tert-butyl pyridine on the polymerization using tricumyl chloride (TCC) + boron chloride

AUTHOR(S): Pask, Stephen D.; Nuyken, Oskar

CORPORATE SOURCE: TU Muenchen, Garching, D-8046, Fed. Rep. Ger.

SOURCE: Polymer Bulletin (Berlin, Germany) (1982), 8(9-10), 457-60

CODEN: POBUDR; ISSN: 0170-0839

DOCUMENT TYPE: Journal

LANGUAGE: English

AB An attempt was made to optimize conditions for the prepn. of tristar polyisobutene [9003-27-4] having C(CH<sub>3</sub>)<sub>2</sub>Cl end groups and narrow mol. wt. distributions by using tricumyl chloride (I) [84406-02-0] inifer and BCl<sub>3</sub> as catalyst system in the presence of 2,6-di-tert-Bu pyridine (II) [585-48-8]. All polymers prepd. in the presence of II had very narrow mol. wt. distributions. When II was present the temp. had little or no effect on mol. wt. or yields. The ratio [isobutene]/[I] was the controlling factor for the mol. wts. The yields were low, generally <50%. The most important action of II was to hinder chain initiation by protons (either from a transfer reaction or impurities in the system), but II also affected the chain termination reactions (and possibly the propagation rate). Possible mechanisms were discussed.

CC 35-4 (Chemistry of Synthetic High Polymers)

IT Chain-transfer agents

(inifers, tricumyl chloride, for isobutene polymn. in presence of boron trichloride, di-tert-Bu pyridine effect on)

L15 ANSWER 323 OF 324 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1983:35021 HCAPLUS

DOCUMENT NUMBER: 98:35021

TITLE: Polymerization of isobutene by the inifer technique.

2. Products using cumyl chloride + boron chloride

AUTHOR(S): Nuyken, Oskar; Pask, Stephen D.; Walter, Michael

CORPORATE SOURCE: TU Muenchen, Garching, D-8046, Fed. Rep. Ger.

SOURCE: Polymer Bulletin (Berlin, Germany) (1982), 8(9-10), 451-5

CODEN: POBUDR; ISSN: 0170-0839

DOCUMENT TYPE: Journal

LANGUAGE: English

AB It was possible to produce low-mol.-wt. monofunctional polyisobutylene [9003-27-4] by using cumyl chloride (I) [934-53-2] and BCl<sub>3</sub> as the initiating system provided that 2,6-di-tert-butylpyridine (II) [585-48-8] was included in the reaction mixt. and that the ratio [II]/[I] > 1. The presence of II in the reaction mixt. led to a redn. in the no. of the desired CMe<sub>2</sub>Cl end groups. The amt. of polymer with mol. wt. 200-300 was reduced by the presence of II. A mechanism is derived in which II acts as a blocking agent for certain steps.

CC 35-3 (Chemistry of Synthetic High Polymers)

IT Chain-transfer agents

(inifers, cumyl chloride as, in polymn. of isobutene)

L15 ANSWER 324 OF 324 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1982:123419 HCAPLUS

DOCUMENT NUMBER: 96:123419

TITLE: A model for living radical polymerization

AUTHOR(S): Otsu, Takayuki; Yoshida, Masatoshi; Tazaki, Toshinori

CORPORATE SOURCE: Fac. Eng., Osaka City Univ., Osaka, 558, Japan

SOURCE: Makromolekulare Chemie, Rapid Communications (1982), 3(2), 133-40

CODEN: MCRCD4; ISSN: 0173-2803

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The polymn. of Me methacrylate [80-62-6] takes place by living radical homogeneous soln. polymn. in the presence of PhN:NCPH<sub>3</sub> [981-18-0] (thermal iniferter) or Et<sub>2</sub>NCS<sub>2</sub>CH<sub>2</sub>Ph [3052-61-7]

(photoiniferter). The functionally terminated poly(Me methacrylate) obtained with these **iniferters** was capable of further polymn. with added monomer.

CC 35-3 (Chemistry of Synthetic High Polymers)

ST living radical polymn methacrylate; **iniferter** living radical polymn

IT Polymerization

(living, radical, of Me methacrylate in presence of **iniferters**)